

RTCA Special Committee 186, Working Group 3

ADS-B 1090 MOPS

Meeting #4

**Who is Required to Broadcast the Aircraft Operational Status
Message?**

**Presented by
James Maynard, UPS Aviation Technologies**

SUMMARY
<p>This paper arises from Action Item-3-1, in which I was tasked to study DO-260 to see whether the Status Message is required to be transmitted by all 1090 MHz ADS-B transmitting equipment in all installations for all equipage classes.</p> <p>My study led me to believe that equipage class related requirements on messages to be transmitted are not to be found in the DO-260 MOPS at all. Instead, one must infer them by reading that MOPS in conjunction with the DO-242 MASPS. I believe we should add those requirements to DO-260A, so that a reader of DO-260A will know whether or not a given ADS-B participant must broadcast the aircraft operational status message.</p>

Q: Which aircraft, by equipage class, are required to transmit the Aircraft Operational Status Message?

A: The DO-260 MOPS doesn't say. Requirements by equipage class are, however, to be found in DO-242, the ADS-B MASPS. In DO-242, page 108, Table 3-8(b) says that "equipage class A0" ADS-B participants need only transmit messages to support the SV report and elements 1 through 4 of the MS report. MS elements 1 through 4 include the Participant Address, the Call Sign, the Participant Category, and Surveillance Support Code ["Normal" or "Default."], but not the "Class Codes," which are MS element #6. The Aircraft Operational Status message contains information for "Capability Class Codes" (divided into capabilities used in the En Route, Terminal Area, Approach and Landing, and Surface phases of flight). It also contains subfields to declare the "Operational Mode" of the transmitting ADS-B participant – presumably to support MS element #11, Operational Mode Specific Data. However, according to DO-242, neither MS element #6 nor MS element #11 are required to be transmitted by a Class A0 ADS-B participant.

By comparing DO-260 to DO-242, I infer that an aircraft equipped with Class A0 ADS-B transmitting equipment is not required to transmit the Airborne Operational Status Message.

Table 3-8(b) in DO-242 states that for equipage classes A1 and above, the transmitting ADS-B participant must transmit messages to support MS elements 1 through 6. MS element #6 is the "Class Codes," which are conveyed on the 1090 MHz data link in the Aircraft Operational Status Message. Therefore, I infer that aircraft equipped with Class A1, A2, or A3 ADS-B transmitting equipment are required to transmit the Airborne Operational Status Message.

Table 3-9(b) on page 103 of DO-242 lists the information broadcast requirements "broadcast only" devices. According to that table, all "broadcast-only" ADS-B participants are required to transmit data to support MS elements 1, 3, and 4: participant address, call sign, and participant category. MS element #6, "class codes," is not required of Class B (broadcast-only) ADS-B participants. So, on the 1090 MHz data link, Class B ADS-B participants need not transmit the Aircraft Operational Status Message.

The following table summarizes the situation:

Equipage Class	Aircraft Operational Status Message Required?
A0	No
A1	Yes
A2	Yes
A3	Yes
B1	No
B2	No
B3	No

Recommendation: The DO-260A MOPS should be explicit in stating that Class A1, A2, and A3 ADS-B participants shall transmit the Aircraft Operational Status Message, and that Class A0, B1, B2, and B3 participants are not required to transmit that message.